

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

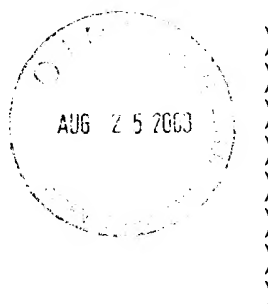
BROECKEL et al.

Serial No. 09/487,000

Filed: March 7, 2000

For: IMPREGNATED SALTS, THEIR PRODUCTION AND USE

Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231



)  
)  
) Art Unit: 1761

)  
) Examiner: Pratt, H  
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BRIEF ON APPEAL

Sir:

This appeal is from the examiner's rejection of June 11, 2003.

REAL PARTY IN INTEREST

The real party in interest is BASF Aktiengesellschaft of Ludwigshafen, Germany.

Reel 010747, Frame 0407, recorded on March 7, 2000.

RELATED APPEALS AND INTERFERENCES

To appellants' knowledge and belief, there are no interferences or other appeals which will directly affect or be directly affected by or have a bearing on the Board's decision in this application.

STATUS OF CLAIMS

Claims 1-2, 4-19, and 21 remain in the application. Applicants submitted new claim 22, drawn to the previously canceled subject matter of original claim 3, in their most recent reply. However, this claim appears not to have been entered by the examiner. Applicants respectfully request that the subject matter of claim 22 also be

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considered in the course of this appeal. Claims 1-2, 4-19, and 21 stand rejected under 35 USC §103(a) as being unpatentable over van Ooijen (EP 0 608 975 A1), Gonthier et al. (US 3,600,198), and Kotani et al. (US 4,122,187), each individually.

#### STATUS OF AMENDMENTS

No amendment after the last rejection has been filed.

#### SUMMARY OF INVENTION

The present claims are drawn to salts of carboxylic acids which have been impregnated with from 0.5 to 30% by weight of at least one liquid carboxylic acid. The claims are also drawn to processes for producing these impregnated salts, preservatives produced from the impregnated salts, and processes for using the salts as preservatives.

#### ISSUES

Whether claims 1-2, 4-19, and 21 are unpatentable under 35 USC § 103 as being obvious over the disclosure of van Ooijen or Gonthier et al. or Kotani et al., each individually.

#### GROUPING OF CLAIMS

The claims have not been argued separately, and will not be argued separately here.

#### ARGUMENTS

The following legal authorities are relied on in the following arguments in the order in which they are cited:

*W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed Cir. 1983);

*Specialty Composites v. Cabot Corp.*, 6 USPQ 2d 1601 (Fed. Cir. 1988));

*In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997);

*In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990);

*In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988);

*In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992);

*In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986);

*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974);

### THE REJECTIONS

#### REJECTION OF THE CLAIMS BASED ON VAN OOIJEN

The examiner has rejected claims 1-2, 4-19, and 21 under 35 USC §103(a) as obvious over the disclosure of van Ooijen. This reference, however, teaches away from the presently claimed subject matter, which achieves unexpected results relative to the disclosure therein.

Van Ooijen discloses a method of storing hydroxycarboxylic acids which are releasably bound to a support. The compositions comprise

an alkali(ne earth) metal carboxylate of a hydroxycarboxylic acid which is a liquid or a semi-solid at ambient temperature, and an aliphatic carboxylic acid which has a lower pKa than that of the hydroxycarboxylic acid.

(p.2:20-22). To produce these compositions where the aliphatic carboxylic acid is a

liquid, "this liquid can be used to impregnate the solid calcium carboxylate of the hydroxycarboxylic acid" (p.3:13-14). The relative proportion of aliphatic carboxylic acid introduced into the hydroxycarboxylate salt "is limited only by the physical ability ... for the former to be impregnated on the latter" (p.3:16-18). The hydroxycarboxylate salt may be impregnated with from 1 to 90% by weight of the aliphatic carboxylic acid, "preferably 40-60%" by weight, with "[a]n equimolar mixture ... most preferred" (p.3:18-21).

As the examiner has pointed out, the present claims "differ from the [van Ooijen] reference in the particular amount of acid in the product" (office action of March 1, 2001, "Paper #5" hereinafter, p.4). In the present claims, from 0.5 to 30% by weight of carboxylic acid is impregnated into the carboxylic acid salt. As the Federal Circuit has stated, the prior art must be considered in its entirety, including portions that would lead away from the claimed invention (*W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (1983)). Further, proceeding in a direction different from others in the art produces unexpected results, which in turn provide objective evidence of nonobviousness (*Specialty Composites v. Cabot Corp.*, 6 USPQ 2d 1601 (Fed. Cir. 1988)). Rebuttal of a *prima facie* case of obviousness can be made by showing that the art teaches away from the claimed invention in any material respect (*In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997)).

Van Ooijen teaches away from the presently claimed range of carboxylic acid, by preferring from 40 to 60% of the carboxylic acid to be impregnated into the carboxylate

salt, and stating that equimolar amounts are most preferred. It is in the very nature of the van Ooijen invention that equimolar amounts are optimal. The carboxylate salt is combined with a carboxylic acid having a lower pKa (p.2:22). This combination is made so that upon dissolution, the carboxylic acid will preferentially assume the salt form, thus releasing the desired carboxylic acid previously in carboxylate form.

Applicants respectfully submit that one of skill in the art would readily recognize from this purpose that the optimal proportions for the carboxylic acid and carboxylate salt are equimolar. Such proportions would allow for the maximum amount of the desired carboxylic acid to be released. Inclusion of any less carboxylic acid would make the composition less effective, as much of the desired carboxylic acid would remain bound in its carboxylate form. Accordingly, as the van Ooijen reference, itself, teaches away from lower proportions of carboxylic acid in the mixtures, the examiner's *prima facie* case stands rebutted.

Further, the presently claimed range is critical to the present invention in that it allows carboxylic acid compositions of high concentration to be produced without drawbacks traditionally associated with such compositions. As indicated in the present specification, the claimed salts and preservatives

have the advantage that the highly pungent odor of the acid is reduced [and] advantageously comprise an active substance content of from 68 to 75% by weight ... . Both the novel impregnated salts and the preservatives release the acid content efficiently and rapidly from the solid and have good storage, flow and processing properties.

(p.3:11-19). Given that the claimed range is critical to the presently claimed invention,

the examiner's *prima facie* case, again, stands rebutted (*In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)).

In light of the above remarks, applicants respectfully submit that the presently claimed invention is not obvious over the disclosure of van Ooijen, and request that the rejection of the claims for obviousness, based on this reference, be withdrawn.

REJECTION OF THE CLAIMS BASED ON GONTHIER ET AL.

The examiner has rejected claims 1-2, 4-19, and 21 under 35 USC §103(a) as obvious over the disclosure of Gonthier et al. To establish *prima facie* obviousness, the examiner must show in the prior art a teaching or suggestion of each claim element, some suggestion or motivation to make the claimed invention, and a reasonable expectation for success in doing so (*see, e.g., In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986); *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). These requirements have not been met in the examiner's rejection based on Gonthier.

The examiner characterized Gonthier as disclosing "an impregnated salt containing like acid and salts" and differing from the present invention only "in the particular amounts used" (ppr.#5, p.4-5, citing Gonthier at col.1:41-69). Gonthier, however, does not make mention of impregnated salts. The invention therein is  
a mixture of propionic acid and benzoic acid buffered with their

corresponding salts of alkali metals or of magnesium.

The new compositions according to the invention are mixtures of a buffered mixture of propionic acid/metal propionate and of a buffered mixture of benzoic acid/metal benzoate the total pH of which is lower than 7 and preferably between 4 and 5.

The following are examples of such compositions: propionic acid-sodium propionate and benzoic acid-sodium benzoate; propionic acid-magnesium propionate and benzoic acid-sodium benzoate; propionic acid-[ ]sodium propionate and benzoic acid-magnesium benzoate; and propionic acid-magnesium propionate and benzoic acid-magnesium benzoate.

The respective ratios of alkali metal or magnesium salt to the organic acid in the buffered systems depend upon the desired pH; to obtain a pH within the limits indicated heretofore, the molar ratio of salt/corresponding acid may vary from 0.1/1 to 100/1.

(col.1:49-68.)

As stated above, there is no mention of impregnated salts. Further, ample evidence supports the conclusion that Gonthier exclusively envisions liquid mixtures. In particular, it is known to the skilled artisan that a buffer is "[a] *solution* containing both a weak acid and its conjugate weak base, whose pH changes only slightly on addition of acid or alkali" (Hawley's Condensed Chemical Dictionary, (1997), p.169, emphasis supplied (see enclosed copy)). Further, pH is commonly understood to be "a value taken to represent the acidity of alkalinity of an *aqueous solution*" (Hawley's, p.857, emphasis supplied (see enclosed copy)).

Given that the mixtures disclosed by Gonthier are, according to all reasonable inferences, *solutions* containing the relative amounts of propionic acid/benzoic acid and their respective salts, these cannot reasonably be said to teach or suggest the production of impregnated salts of these acids. The examiner has made no rebuttal to

these arguments, other than to say that the active mixture is measured in grams, and not liters, and that it can be introduced into water to make a liter of the product (office action of June 11, 2003, ppr.#20 hereinafter, p.3). Applicants respectfully submit that measurement of liquid in terms of grams is not unusual, and addition of a weight amount of a liquid mixture to a volume amount of water is common enough. The actual wording used to describe the mixture, i.e., "buffered mixture" and "total pH," indicates that it is aqueous, regardless of the manner in which it is measured for subsequent use.

Accordingly, Gonthier does not teach the present invention, and cannot fairly be said to make the present invention obvious. Applicants respectfully request that the rejection be withdrawn.

#### REJECTION OF THE CLAIMS BASED ON KOTANI

The examiner also rejects claims 1-2, 4-19, and 21 as obvious over the disclosure of Kotani, et al. Again, the examiner has not established *prima facie* obviousness, as the disclosure of Kotani has not been shown to teach or suggest all elements of the present claims.

Kotani discloses compositions made from sorbic acid, or double salts of sorbic acid, mixed together with glycerin. The examiner has argued that this disclosure teaches use of the presently claimed salts and acids, in particular through the precipitated double salts described therein, and asserts that applicants carry the burden to present objective evidence to support any product by process arguments.



Applicants respond by pointing to the only disclosure given in Kotani for production of double salts of sorbic acid (col.2:52-64). The disclosure gives two procedures. The first is as follows:

For instance, sorbic acid-potassium sorbate double salt[,] which is [a] typical example of the double salts[,] is produced by a process in which sorbic acid is dissolved in 90% ethanol with heating, and after adding to the solution *an equimol[ar] amount* of potassium sorbate ... the solution is heated ... and the resulting reaction mixture is then cooled to precipitate crystals.

(col.2:52-64.) The second is

a process in which sorbic acid is dissolved in 90% ethanol with heating and is thermally reacted with *about 0.5 mole of potassium hydroxide per mole of sorbic acid*, and the resulting reaction mixture is then cooled to precipitate crystals.

(col.2:60-64.) In each of these processes, the double salts are produced such that the sorbic acid and potassium sorbate are essentially equimolar. No further discussion is given in this reference, and the examiner has not indicated how one of skill in the art would be motivated to make the presently claimed impregnated salts based on this disclosure. Applicants respectfully submit that Kotani does not disclose the presently claimed invention, and request that the rejection be withdrawn.

#### CONCLUSION

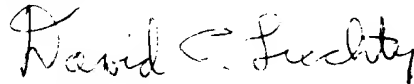
The present claims are unobvious in view of the disclosures of van Ooijen, Gonthier, and Kotani. These references either teach away from the presently claimed invention, or do not teach or suggest key elements of the present claims. Accordingly,

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the rejection based on 35 USC §103(a) of claims 1-2, 4-19 and 21 should be withdrawn, and the case should be passed to allowance. Applicants respectfully request such action.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees to Deposit Account No. 11-0345. Please credit any excess fees to such deposit account.

Respectfully submitted,  
KEIL & WEINKAUF

A handwritten signature in cursive script, reading "David C. Liechty".

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## APPENDIX

1. Impregnated salts comprising at least one salt of one or more carboxylic acids, which salt has been impregnated with from 0.5 to 30% by weight, based on the carboxylic acid salt, of at least one liquid carboxylic acid.
2. Impregnated salts as claimed in claim 1, comprising at least one salt of a C<sub>1</sub>-C<sub>8</sub>-mono- or dicarboxylic acid, which salt has been impregnated with at least one C<sub>1</sub>-C<sub>8</sub>-mono- or dicarboxylic acid.
3. (canceled)
4. Impregnated salts as claimed in claim 1, where the carboxylic acids in the carboxylic acid salts and the carboxylic acid used for impregnating the salts are identical.
5. Impregnated salts as claimed in claim 1, wherein the impregnated salts comprise at least one salt selected from the group of ammonium, potassium, sodium, lithium, magnesium or calcium salts.
6. A preservative comprising an impregnated salt as claimed in claim 1.
7. A preservative as claimed in claim 6, additionally comprising a carrier.
8. A preservative as claimed in claim 6, which is coated with a protective agent which is soluble or swellable in water at 20°C.
9. A preservative as claimed in claim 6, wherein water-soluble polymers, organic acids, their salts or low-melting inorganic salts are used as protective agents.
10. A preservative as claimed in claim 6, further comprising a protective agent selected from the group consisting of polyethylene glycols, polyvinylpyrrolidones, C<sub>3</sub>-C<sub>14</sub>

organic acids and their salts, and amino acids and their salts.

11. A preservative as claimed in claim 6, wherein a dusting powder is applied to the surface in addition to or in place of the protective agent.
12. A process for producing impregnated salts as claimed in claim 1, which comprises impregnating at least one salt of a carboxylic acid or of a mixture of carboxylic acids, with at least one liquid carboxylic acid until the concentration is 30% by weight based on the carboxylic acid salt.
13. A process as claimed in claim 12, wherein at least one carboxylic acid is introduced into a mixer, and at least one salt of a carboxylic acid or of a mixture of carboxylic acids is metered in.
14. A process for producing a preservative, which comprises mixing impregnated salts as claimed in claim 1 with one or more carriers and/or formulation auxiliaries, and agglomerating with or without the addition of at least one binder.
15. A process as claimed in claim 14, wherein the preservative is coated with a protective agent which is soluble or swellable in water at 20°C and/or if required the flow characteristics of the preservative are ensured by dusting with a finely dispersed dusting powder.
16. A process for preserving human and animal food, wherein the impregnated salts as claimed in claim 1, or the preservatives are added to the human or animal food.
17. A preservative as claimed in claim 6, additionally comprising formulation auxiliaries.

18. A preservative as claimed in claim 10, wherein the protective agent is selected from the group consisting of C<sub>3</sub>-C<sub>6</sub> organic acids and their salts.
19. A preservative as claimed in claim 18, wherein the protective agent is selected from the group consisting of citric acid, fumaric acid, succinic acid, adipic acid, benzoic acid and their salts.
20. (canceled)
21. A process for acid treatment wherein the impregnated salts of claim 1 or the preservatives are introduced into or placed on an item to be treated.
22. Impregnated salts as claimed in claim 1, comprising at least one salt of a carboxylic acid selected from the group consisting of formic acid, acetic acid or propionic acid, which salt has been impregnated with at least one carboxylic acid selected from the group consisting of formic acid, acetic acid or propionic acid.